

A NEW CERCARIA FROM
 PHELUSSA FULMINATA (HUTTON, 1883),
 (PULMONATA: ENDODONTIDAE)

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Abstract. A new distomous cercaria is described and the possible definitive host is discussed.

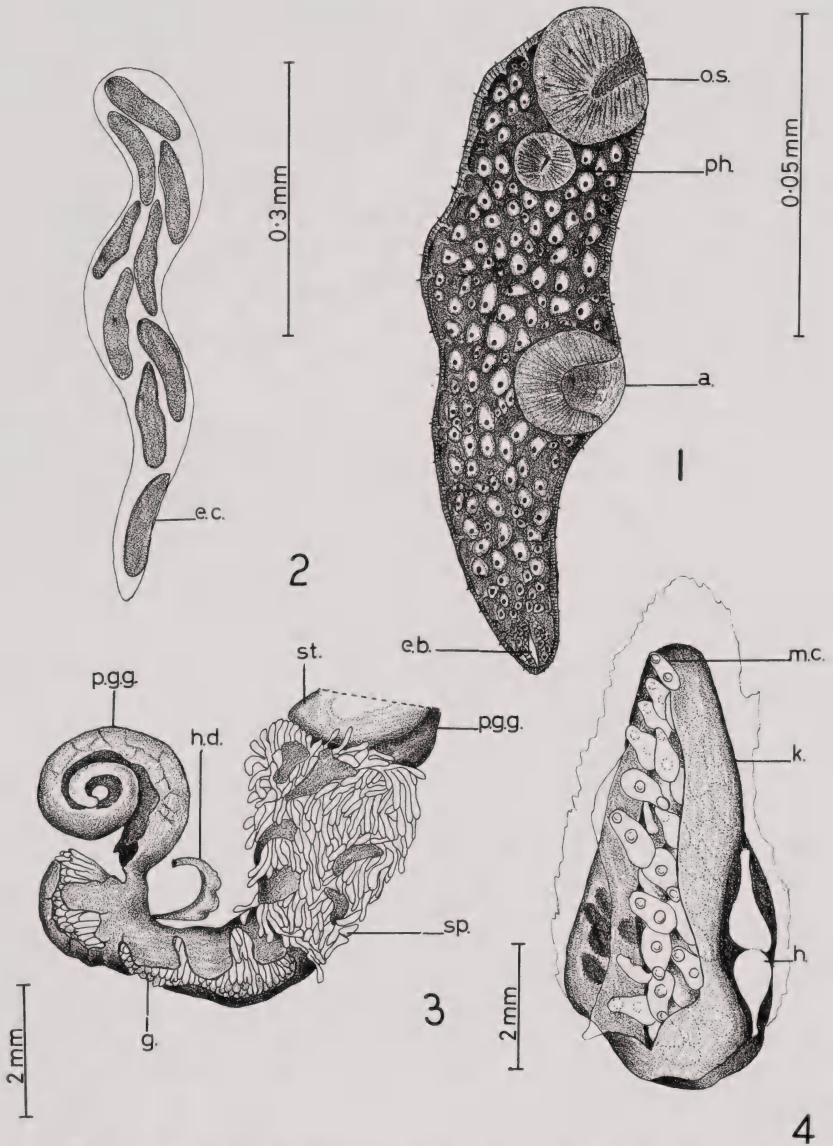
The only other larval trematode reported from New Zealand endodonts was a dicrocoelid recorded from *Allodiscus godeti* Suter, 1891 (Suter 1891). This was incompletely described and poorly figured. A new species of *Paradistomum* Kossack, 1910 (Dicrocoelidae) has been described (Allison and Climo, 1969) from the gall-bladder of *Hoplodactylus pacificus* (Gray) (Gekkonidae) and this could be the adult stage of the cercaria recorded by Suter.

Class	TREMATODA
Subclass	DIGENEA
Family	BRACHYLAEMIDAE Joyeux et Foley, 1930
Subfamily	BRACHYLAEMINAE Joyeux et Foley, 1930

***Cercaria fulminata* n.sp.** (Figs. 1-7)

HOST AND TYPE LOCALITY. The molluscan host is a large endodont land snail, approximately 12 mm in diameter, endemic to Stewart Island and its off-shore islets. The cercaria is known from a single specimen of *Phelussa fulminata* (Hutton) collected from Codfish Island by P. M. Johns (Department of Zoology, University of Canterbury) in 1964. The parasitized snail was a large mature specimen with a major diameter of 13 mm. Several juvenile snails from the same locality were dissected, but were found uninfected.

LOCATION. Most of the apical whorls of the snail were heavily infected by sporocysts. A large mass of sporocysts extended from the gonads to the stomach and an equally large mass was situated in the posterior gut gland immediately overlying the albumen gland. The posterior gut gland and the albumen gland were atrophied to a fraction of their normal size (Fig. 3). One hundred and eighty-nine cercariae, the largest measuring 1 mm in length, were extracted from the kidney (Fig. 4). The internal folds of the kidney were much reduced, and the kidney wall was ruptured in one place, allowing nineteen cercariae to enter the mantle cavity.



FIGS. 1-4—*Cercaria fulminata* n.sp. from *Phelussa fulminata* (Hutton, 1883).
 1. Immature cercaria. 2. Sporocyst. 3. Sporocysts in posterior gut gland.
 4. Infected kidney.

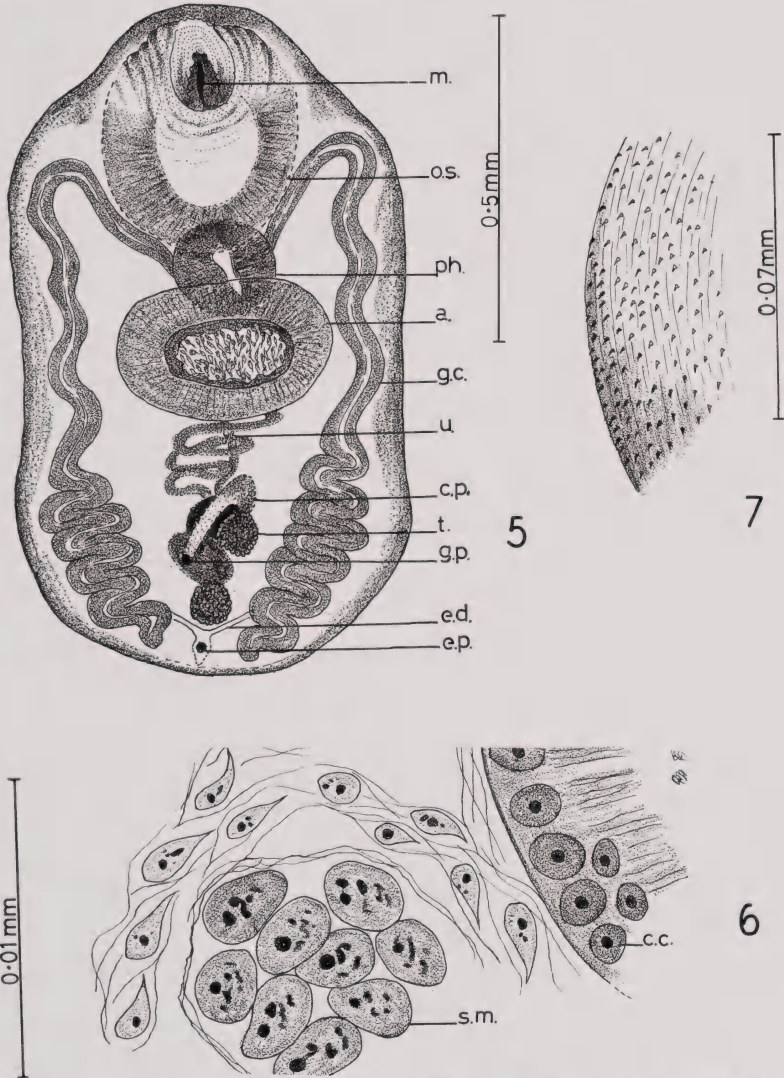
a.—acetabulum; e.b.—excretory bladder; e.c.—embryonic cercariae; g.—gonads; h.—heart; h.d.—hermaphroditic duct; k.—kidney; m.c.—mature cercaria; o.s.—oral sucker; p.g.g.—posterior gut gland; ph.—pharynx; sp.—sporocysts; st.—stomach.

DESCRIPTION OF LARVAL STAGES

Sporocysts. Elongate, sausage-like structures, tapering at one end and measuring between 0.5 and 0.7 mm in length (Fig. 2). Within the sporocysts were 6-12 embryonic cercariae.

Embryonic cercariae. Length 0.1 mm. The only recognisable organs are two suckers, a pharynx and excretory bladder. Most of the body is filled with large, undifferentiated cells, smaller around the excretory bladder (Fig. 1). Oral sucker large, terminal. Pharynx strongly developed, approximately one-fifth the size of oral sucker. Acetabulum strongly developed, nearly equal in size to oral sucker, its position varying slightly but approximately equatorial. Excretory bladder situated at posterior extremity. Cuticle striated and sparsely spinose.

Mature cercariae much larger than embryonic cercariae (1 mm in length). In all specimens examined, the oral sucker was invaginated to some extent, probably due



FIGS. 5-7—*Cercaria fulminata* n.sp. from *Phelussa fulminata* (Hutton, 1883).
 5. Mature cercaria. 6. Sperm mother cells. 7. Surface of mature cercaria.
 a.—acetabulum; c.c.—cells of gut caeca; c.p.—cirrus sac primordium;
 e.d.—excretory duct; e.p.—excretory pore; g.c.—gut caeca; g.p.—gonopore;
 m.—mouth; o.s.—oral sucker; ph.—pharynx; s.m.—sperm mother cell;
 t.—testis; u.—uterus.

to fixation. In life, the cercariae are probably elongate-sole-shaped animals, but when fixed contract assuming a roughly rectangular form, narrowest in the equatorial region. Oral sucker immediately subterminal, its greatest diameter approximately one-quarter of total length. As in embryonic cercariae, pharynx well developed and about one-fifth the size of the oral sucker. Acetabulum about three-quarters the size of the oral sucker, flattened antero-posteriorly and approximately equatorial; its anterior border overlying the pharynx. Gut caeca extend antero-laterally directly from the pharynx and then extend posteriorly (Fig. 5). Caeca slightly sinuous for about two-thirds of their length, but become strongly sinuous posterior to the acetabulum. (The degree of sinuosity has been used as a character for generic diagnosis, but it is impossible to say how much of the sinuosity in the animals here described is contraction due to fixation.) Caeca terminate opposite excretory bladder. The right caecum tends to be longer. Only reproductive primordia were recognisable. Two testes arranged obliquely in the posterior quarter of the animal, the posterior on the midline immediately anterior to the bifurcation of the excretory bladder and the anterior testis one testis width forward and to the right of the midline. (The testes were at the sperm mother cell stage, Fig. 6.) The gonopore opens just to the left of the midline between testes, and from it the cirrus sac primordium can be traced antero-laterally to a point just anterior to the anterior testis. Between the testes, and ventral to the cirrus sac primordium are groups of cells, probably the primordia of the rest of the glandular structures associated with the reproductive system. In some specimens, uterine coils were visible between the reproductive glands and the acetabulum but no eggs were present. Excretory bladder small, opening subterminally on the midline opposite the terminations of the gut caeca. The bladder bifurcates into two excretory ducts just posterior to the posterior testis, the ducts running antero-laterally, dorsal to the gut caeca. Surface of cercaria strongly spinose (Fig. 7), cuticular spines more sparse and shorter at posterior end of animal.

Type material. Holotype, paratypes and serial sections of mature cercariae from *Phelussa fulminata* (Hutton) collected on Codfish Island, 13 August 1964. The type material has been deposited in the Auckland Institute and Museum.

DISCUSSION

While the cercaria readily keys to the subfamily Brachylaeminae (Yamaguti, 1958) it cannot be placed in any of the three genera listed (p. 675) because of the immature reproductive system.

The cercaria are essentially immature flukes and have no visible modifications for survival outside the host snail. It seems probable that the definitive host is infected passively by ingestion of infected snails. There have been no members of the above subfamily recorded from reptiles and it appears most likely that the definitive host is a bird, since this group of parasites is commonly found in birds. It is possible that the Stewart Island weka, *Gallirallus australis scotti* (Ogilvie-Grant) is the definitive host since it is a ground feeding bird known to eat land snails.

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